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EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/705,498	Applicant(s) GEORGE ET AL.	
	Examiner Scott L. Jarrett	Art Unit 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Requirement for Information – USC § 1.105

1. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

The information is required to identify products and services embodying the disclosed subject matter of the relative cost reduction achieved by the reduction of the complexity of one of a product and/or a series of products compared with improvements in one of a plurality of process activity parameters and identify the properties of similar products and services found in the prior art.

The fee and certification requirements of 37 C.F.R. § 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 C.F.R. § 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 C.F.R. § 1.105 are subject to the fee and certification requirements of 37 C.F.R. § 1.97.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or

cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete response to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete response to the enclosed Office action must include a complete response to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action, which is 3 months.

In response to this requirement, please provide a list of citations to electronically searchable databases or other indexed collections containing publications that document the knowledge within the disclosed art of measuring and reducing the cost of complexity in producing products or services so as to provide the non-value added costs of the product or service for various complexities, quantitatively measuring the amount of non-value added cost due to product complexity versus the non-value added costs due to quality and speed deficiencies, method for reducing the cost of complexity in a manufacturing process, value stream mapping, complexity value stream mapping, synchronous manufacturing, the relative cost reduction achieved by the reduction of the complexity of one of a product and/or a series of products compared with improvements in one of a plurality of process activity parameters and the motion of process improvement (including the first derivative of process velocity).

In response to this requirement, please provide the citation and a copy of each publication which any of the applicants authored or co-authored and which describe the disclosed subject matter of measuring and reducing the cost of complexity in producing products or services so as to provide the non-value added costs of the product or service for various complexities, quantitatively measuring the amount of non-value added cost due to product complexity versus the non-value added costs due to quality and speed deficiencies, method for reducing the cost of complexity in a manufacturing process, value stream mapping, complexity value stream mapping, synchronous manufacturing, the relative cost reduction achieved by the reduction of the complexity of one of a product and/or a series of products compared with improvements in one of a plurality of process activity parameters, lean manufacturing, lean six sigma, and the motion of process improvement (including the first derivative of process velocity).

In response to this requirement, please provide the citation and copy of each publication that is a source used for the description of the prior art in the disclosure. For each publication, please provide a concise explanation of that publication's contribution to the description of the prior art.

In response to this requirement, please provide the citation and a copy of each publication that any of the applicants relied upon to develop the disclosed subject matter that describes the applicant's invention, particularly as to developing measuring and reducing the cost of complexity in producing products or services so as to provide the

non-value added costs of the product or service for various complexities. For each publication, please provide a concise explanation of the reliance placed on that publication in the development of the disclosed subject matter.

In response to this requirement, please provide the citation and a copy of each publication that any of the applicants relied upon to draft the claimed subject matter. For each publication, please provide a concise explanation of the reliance placed on that publication in distinguishing the claimed subject matter from the prior art.

In response to this requirement, please provide the names of any products or services that have incorporated the disclosed prior art of measuring and reducing the cost of complexity in producing products or services so as to provide the non-value added costs of the product or service for various complexities and the determining of workstation turn over time, minimum batch size, average total system inventory (synchronous, asynchronous, and setup-on-batch arrival) and work in process.

In response to this requirement, please state the specific improvements of the claimed subject matter in claims 1-12 over the disclosed prior art and indicate the specific elements in the claimed subject matter that provide those improvements. For those claims expressed as means or steps plus function, please provide the specific page and line numbers within the disclosure which describe the claimed structure and acts.

In response to this requirement, please state whether any search of prior art was performed. If a search was performed, please state the citation for each prior art collection searched. If any art retrieved from the search was considered relevant to demonstrating the knowledge of a person having ordinary skill in the art to the disclosed (describe subject matter for which art is required), please provide the citation for each piece of art considered and a copy of the art.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600

DETAILED ACTION

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The attempt to incorporate subject matter into this application by reference to U.S. Patents, Toyota Product System, Kanban, Lean, Lean Six Sigma, Shingo, Kaplan and a plurality of other prior art references is improper.

Appropriate correction required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite and failing to point out and distinctly claim the subject matter which the applicant regards as the invention.

The disclosure does not clearly define the simplifying assumptions (constraints) made on the mathematical models (functions, equations) as claimed. Examiner suggests applicant include in the claim language the variable definitions and the simplifying assumptions applicable to each of the equations as claimed, including but not limited to the symmetric parts/products and workstations (Specification, Paragraph 0089, Page 33) and sequentially ordered workstations (Specification, Paragraph 0091, Page 33).

Claim Rejections - 35 USC § 101

5. Claims 1-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts. In the present case, claims 1-12 only recite an abstract idea. The recited steps of determining the relative cost reduction achieved by the reduction of the complexity of one of a product and/or a series of products compared with improvements in one of a plurality of process activity parameters does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. These steps only constitute an idea of measuring and reducing the cost of complexity in producing products or services so as to provide the non-value added costs of the product or service for various complexities.

Additionally, for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result. In the present case, the claimed invention determines the relative cost reduction achieved by the reduction of the complexity of one of a product and a series of products compared with improvements in one of a plurality of process activity parameters and further the adjusting one of the selected parameters to modify the number of product units in process does not produce a tangible result. The claimed invention, as a whole, is not within the technological art as explained above claims 1-12 are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over George et al., U.S. Patent 5,195,041 in view of Hoehn et al., Robust Designs Through Design To Six Sigma Manufacturability.

Regarding Claim 1 George et al. ('041) teaches:

- a method for improving manufacturing processes through the analysis of a plurality of process activity parameters (Column 2, Lines 65-68; Column 3, Lines 1-8 and 49-68; Column 4, Lines 1-2) wherein the method includes modeling the manufacturing process, identifying the steps or processes which are candidates for improvements, and determining the character and quantity of improvements;

- that the manufacturing process is broken down into a process flows (flows of materials) that are processed by a series of workstations (Column 3, Lines 1-8, 15-18);

- the importance of continual improvement (process optimization) as related to the product or services provided by an enterprise in the global economy (Column 1, Lines 13-22) and;

- the use of Just in Time or Toyota methods for process improvement (Column 1 Lines 5-7).

George et al. ('041) does not teach the determination of the relative cost reduction achieved by the reduction of the complexity of a product and/or series of products or the comparison of the improvements (cost reductions) gained from reductions in product complexity and improvements in process activity parameters.

Hoehn et al., teaches the integration of Six Sigma, a methodology for improving processes that utilizes data and statistical analysis to measure and improve a enterprise's operational performance by identifying and eliminating defects (a defect being defined as any type of undesired result or a failure to meet one of the acceptance criteria), and Robust Design, a methodology for minimizing a product's sensitivity to variations in the products parts and materials, manufacturing processes and its operating environment, wherein the integration of these two methodologies insures the product's manufacturability and its ability to meet the customer's requirements (Abstract and Introduction, Page 241; Paragraph 1, Page 242; Sections 5 and 6, Pages 243-245).

Hoehn et al. further teaches that there exists a plurality of means for reducing the sensitivity of a product's design including process redesign, product and process redesign and parameter (tolerance) design (Figure 3.1, Page 243).

Hoehn et al. does not expressly teach methods or metrics used as part of the Robust Design methodology. However the inclusion of manufacturing requirements and/or considerations during the product development process is old and very well

known in the art and is commonly referenced as: design for six sigma (DFSS), design for production (DFP), design for manufacturing/manufacturability (DFM), value engineering, design for speed or design for time-to-market and relates to any process wherein process improvements (cost reductions, increased workstation cycle times, etc.) are achieved through improvements in the design of articles for manufacturing including but not limited to the reduction of the complexity of a product or a series of products/parts.

Further it is old and well known in the art that robust design (design for manufacturability) can be achieved through a plurality of approaches the most basic of which are standardization (as per applicants own admission, Specification, Paragraph 48, Page 14), modular design and process restructuring.

It would have been obvious to one skilled in the art at the time of the invention that the importance of continual process improvement and the method for improving manufacturing processes through the analysis and adjustment of at least one of a plurality of process activity parameters as taught by George et al. ('041) would have benefited from the expanded ability to further decrease costs and improve the manufacturing process by utilizing the integration of Six Sigma and Robust Design as taught by Hoehn et al.

Regarding Claim 2 George et al. ('041) teaches a method for meeting aggregate demand measured in product units per unit time (shipping rate, minimum flow rate,

flowout; Column 4, Lines 7-8; Column 9, Lines 11-33; Claim 1a) based on the number of different products (processes) and workstations (Figure 2, Element 206).

Regarding Claims 3 and 5 George et al ('041) teaches:

- a method to compute minimum batch size (Bij, MINBij) and workstation turnover (CTj, WTTj) for each product consistent with meeting customer demand as well as the workstation turnover time associated with the minimum batch sizes (Column 15 Equations 9 and 10; Figure 2, Element 218; Figure 7 Elements 706 and 708) and;

- a method for determining the setup times, processing times, workstation turnover time (cycle times) and batch sizes (minimum batch sizes) to meet a required flow rate (production rate, shipping rate, aggregate demand; Column 3, Lines 29-35, 49-68; Column 4, Lines 1-2 and 23-31).

George et al. ('041) does not expressly teach the equations as claimed. However as per applicant's own admission these equations are provided or can be derived (Specification, Paragraphs 63 and 65, Pages 21-22).

"[00631] Using the logic and equations developed in the methods described in U.S. patents 5,195,041 and 5,351,195, one can derive the minimum batch size that can be processed at each workstation that is consistent with meeting the vector of demand rates without stockout or delay."

"[0065] The algorithm described in U.S. patents 5,195,041 and 5,351,195 provides method to compute MINBij and WTTj each product i and each workstation j. That is, the algorithm and an associated computer program may compute the minimum batch consistent with meeting the final customer demand without stocking out of any part or

product, as well as the workstation turnover time associated with the minimum batch sizes."

Regarding Claims 4 and 6 George et al ('041) teaches the calculation of a plurality of non-value added process parameters as a means for determining and eliminating non-valued added steps/processes (waste, waste functions; Column 1, Lines 50-61) including but not limited to: percent scrap, percent rework, rework setup time, startup-scrap, startup rework and dollar value of material (Column 8, Lines 8-22). More specifically George et al. ('041) teaches that the percent scrap is the percentage of parts for a given process that are scrapped and that setup time includes the time to produce defective (waste, non-value added) parts (Column 8, Lines 63-66).

Regarding Claim 7 George et al. is silent on identifying or determining the cost of demand (increase product complexity and/or product differentiation).

Official notice is taken that enterprises competing in the growing global economy, the ever expanding and almost insatiable demand for increasingly complex and differentiated products/services and the increasing agility of manufacturers and service providers has lead to an environment wherein increased product/service complexity as a means for differentiating an enterprise's products/services from a plurality of similarly purposed product/services is the norm. Further without such product/service differentiation enterprises would find it difficult to successfully compete.

It would have been obvious that the method for improving manufacturing process as taught by George et al. ('041) and as discussed above and would have benefited from understanding (identifying, determining and managing) the impact of product differentiation (cost of demand as a potential non-value added cost) to insure their ability to compete successfully.

Regarding Claims 11 and 12, claims 11 and 12 recites similar limitations to Claim 1, 3 and 5 and are therefore rejected using the same art and rationale as applied in the rejection of Claims 1, 3 and 5.

8. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over George et al., U.S. Patent 5, 195,041 in view of Hoehn et al., Robust Designs Through Design To Six Sigma Manufacturability, as applied to claims 1-12 above, and further in view of Bolch et al., Queuing Networks and Markov Chains.

Regarding Claim 8-10 George et al. ('041) teaches the method for modeling and improving manufacturing process as discussed above. George et al. ('041) further teaches the determination of system inventory (inventory trapped; Column 4, Lines 23-31; Figure 8; Column 11, Lines 18-24).

George et al. ('041) does not teach synchronous, asynchronous or setup-on-batch-arrival manufacturing processes or the determination of the average total system inventory in a facility utilizing the equations as claimed.

Bolch et al., teaches the modeling of a manufacturing process/system utilizing well known queuing network models as a means for evaluating the performance and improvement of such systems (Chapter 13, Section 13.1.5, Pages 630-637 and Section 13.2.1, Pages 638-641).

More generally Bolch et al. teaches methods for modeling and analyzing information systems for the purpose of performance and reliability evaluation. One such system model is queuing systems consisting of a collection of interconnected workstations wherein parts/jobs are processed and further wherein both the arrival and service schedules are modeled having stochastic characteristics. The simplest queuing model consisting of a single workstation and an input queue wherein the workstation performs some operation on the items in the queue, providing a service to the customer according to some well known queue discipline (first come first serve, priority, weighted and etc; Chapter 6, Pages 209; Figure 6.1 as shown below).

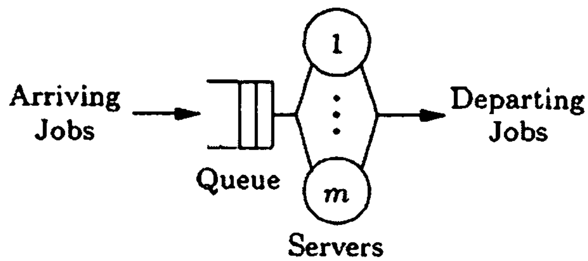

Fig. 6.1 Service station with m servers (a multiple server station).

Figure 1: Single Workstation Queuing System

More specifically Bolch et al. teaches:

- the single station queuing system model and its associated performance measures including equations for determining the utilization, throughput, response (service) time, waiting time, queue length (work in process) and the number of jobs (inventory, work in process) in the system (Chapter 6, Section 6.2, Pages 212-213);

- the validity and applicability of Little's law to queuing systems (Chapter 6, Pages 213, 215);

- the M/G/1 queue model and its associated performance measures and equations (Chapter 6, Section 6.9, Pages 223-225);

- the queuing networks system model and it associated performance measures including equations for determining the utilization, throughput, response (service) time, waiting time, queue length (work in process) and the number of jobs (inventory, work in process) in the system (Chapter 7, Sections 7.1 and 7.2, Pages 265-273);

- the modeling of a production system (Section 13.2.1, Pages 638-64) whose workstations are represented using a network of queues (Figure 13.26, Page 631);

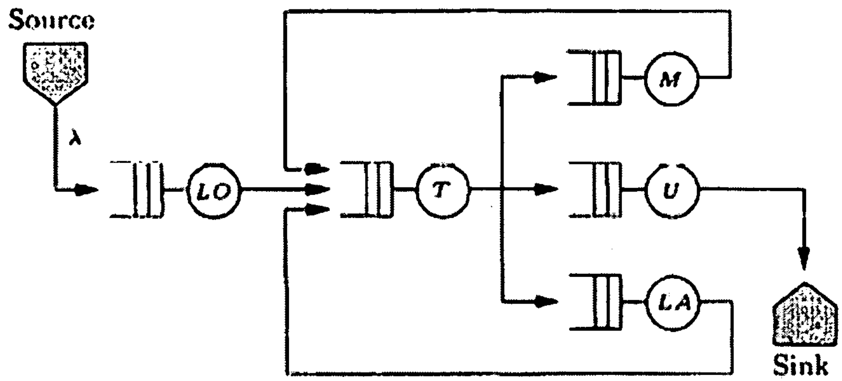

Fig. 13.26 Open network model of the production system shown in Fig. 13.25.

Figure 2: Network Queuing Model - Flexible Production System

- product form and Jackson networks wherein Poisson arrival process is transformed into a Poisson departure process (customer demand) and that the nodes of a queuing network can be considered as independent M/M/m queues (Chapter 7, Sections 7.3.3 and 7.3.4, Pages 283-288) and;

- the use and application of the Pollaczek-Khintchine formula (P-K). The P-K formula gives the expected work in process at a workstation wherein arrival times to the workstation are exponential and Poisson distributions (Markov chains, Markovian distributions, classified as such since the occurrence of the next event depends only on the current event and not on any of the proceeding ones) and workstation process times follow a general distribution M/G/1 queue (Equation 3.28, Chapter 3, Pages 111; Chapter 6, Section 6.9, Pages 223-225).

Bolch et al. teaches the equations for determining the common workstation turnover time and average total system inventory for synchronous, asynchronous or setup-on-batch-arrival manufacturing processes as discussed above.

It would have been obvious to one skilled in the art at the time of the invention that the method for modeling and improving manufacturing process as taught by George et al. ('041) would have benefited from the increased insight and mathematical rigor provided by the old and very well known use of queuing networks to model enterprise processes in view of the Bolch et al.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Sherman, U.S. Patent 5,351,195, teaches the utilization of manufacturing process parameters as a means for improving manufacturing processes. Sherman further teaches minimum flow rates to meet aggregate demand (specified outflow), determining workstation capacity, processing time, and workstation turnover (cycle time).

- Lo et al., U.S. Patent 6,633,791, teaches a system for controlling work flow in a manufacturing process. Lo et al. further teaches dynamic forward loading as a means for balancing a production system and the characteristics and role of work in progress

(WIP, work in process) in a manufacturing system. More specifically Lo et. Al, teaches a means for calculating the work in progress for a manufacturing stage (workstation).

- George et al., Lean Six Sigma: Combining Six Sigma Quality with Lean Production Speed, teaches design for lean six sigma, value stream mapping, batch size calculations, customer value-added processes and process improvement prioritization.

- Lee et al., Modeling the Costs and Benefits of Delayed Product Differentiation, teaches the strategy of delaying a product's point of differentiation during the manufacturing cycle as a means for capturing the costs and benefits of adopting such a strategy provides. More specifically Lee et al., analyzes several special cases of the delayed product differentiation strategy namely standardization, modular design, and process restructuring.

- Darlington, John, Lean thinking and mass customization: The relationship between production and costs, teaches the need to create lean enterprises as a necessary means for competing in an era of mass customizations which results in the need for high product variety and small product batch sizes.

- Hines et al., The seven value stream mapping tools, teaches a method for value stream or supply-chain mapping as a means for removing waste from an enterprise.

- Rummel et al., An empirical investigation of costs in batching decisions, teaches the use of costs and cost functions to model lot-sizing decisions in batch manufacturing systems. Rummel et al., further teaches the evaluation of manufacturing costs with respect to customer added value and the modeling of a manufacturing

system as a M/G/1 queuing system, including the use of the Pollaczek-Khinchin formula.

- Dobson et al., Batching to Minimize Flow Times on One Machine, teaches the impact of batching (lot sizing) on manufacturing performance. Dobson et al., teaches a method for determining the number, size, composition and sequencing of batches to minimize workstation turnover times.

- Herrmann et al., Reducing Throughput Time during Product Design, teaches a method for reducing the manufacturing throughput (cycle time) during the product design stage. More specifically Herrmann et al., teaches the Design For Production (DFP) method of wherein the impact of manufacturing a new product design affects the performance of the manufacturing systems.

- Herrmann et al., Design for Production: A Tool for Reducing Manufacturing Cycle Time, teaches a method for improving manufacturing processes through the analysis of the manufacturability of a product thereby reducing the costs associated with manufacturing a product.

- Bao et al., Affordable Design: A Methodology to Implement Process-Based Manufacturing Cost Models Into the Traditional Performance-Focused Multidisciplinary Design Optimization, teaches the use of process-based manufacturing and assembly cost models in a traditional performance focused multidisciplinary design and optimization process. Bao et al. further teaches that a plurality of processes can be represented as dynamic systems with first-order velocity responses.

- Caramanis et al., A Closed-Loop Approach to Efficient and Stable Supply-Chain Coordination in Complex Stochastic Manufacturing Systems, teaches the modeling of manufacturing processes (cellular manufacturing) as a means for production planning and control. More specifically Caramanis et al. teaches a method, including equations, to calculate the average work in progress, inventory, finished good inventory, lot sizes, setup frequencies and other process activity parameters related to manufacturing cells.

- Caramanis et al., Dynamic Lead Time Modeling for JIT Production Planning, teaches a method for production planning wherein equations are given for determining the work in process, finished good inventory and other process activity parameters.

This Office action has an attached requirement for information under 37 C.F.R. § 1.105. A complete response to this Office action must include a complete response to the attached requirement for information. The time period for reply to the attached requirement coincides with the time period for reply to this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (703) 305-0587. The examiner can normally be reached on 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJ
11/07/2004

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TECHNOLOGY CENTER 3600